

The Relationship Between Acne Vulgaris and Depression: A Literature Review

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Abstract

Acne problems are estimated to affect 9.4% of the global population, which makes it one of the top 8 most common diseases. According to the Global Burden of Disease (GBD) study, acne vulgaris affects 85% of young adults aged 12–25 years. This disease causes depression. It is estimated that the factors that contribute to the increase in acne vulgaris include genetics, hormones, environment and work. Depression can occur in all individuals, regardless of gender, age and background. Depression is very common and it is estimated that nearly 121 million people suffer from this disorder worldwide. The aim of this literature review is to determine the relationship between acne vulgaris and depression. Using the research method used in this research is Literature Review or literature review. The selected articles are those that meet the inclusion criteria, namely the period of publication of journals, books and articles on web pages with a study publication time span of the last 5 years (2019-2024) totaling 10 research articles, by searching the internet by accessing things like Google Scholar, Pubmed, ScienceDirect and BMC. The results of the study showed that from 10 journals, acne vulgaris is associated with depression, acne vulgaris can also occur at any age and has been shown to have a significant emotional impact on individuals, such as shame and low self-esteem associated with the appearance of skin and acne scars. This low self-confidence can be linked to depression.

Introduction

Acne Vulgaris (AV) is an inflammatory disease of the pilosebaceous follicles that commonly affects adolescents. Its clinical presentation includes papules, pustules, nodules, and scarring. Acne Vulgaris can appear on the face, neck, and upper arms. It typically emerges during puberty, serving as an early sign of increased sex hormone production (Fuqua & Eugster, 2022; Calcaterra et al., 2022; Argente et al., 2023). Although Acne Vulgaris is not a medical emergency, it is a condition of significant concern due to its association with depression and anxiety, which can impact an individual's personality. AV can affect people across all age groups, from adolescents and adults to the elderly (Suhartomi et al., 2024). In women, the incidence of AV is more frequent from the age of 14–15 years onwards. According to the Global Burden of Disease (GBD) study, Acne Vulgaris affects 85% of young adults aged 12–25 years. Research in Germany found that 64% of individuals aged 20–29 and 43% of those aged 30–39 suffered from Acne Vulgaris.

The number of Acne Vulgaris cases reaches 17 million in the United States; in China, the prevalence is 51.30%, and in Southeast Asia, it ranges from 40% to 80%. In Indonesia, records from the Indonesian Aesthetic Dermatology Research indicate prevalence rates of 60% in 2006, 80% in 2007, and 90% in 2009 (Ilham, 2024). Many individuals with Acne Vulgaris experience difficulties in social interaction. Depression is one such issue; it is the most frequently observed psychological change, occurring even in cases of mild to moderate Acne Vulgaris.

According to 2016 WHO data, approximately 35 million people suffer from depression. Data from the 2013 Riskesdas survey indicate that the prevalence of mental-emotional disorders manifested by symptoms of depression and anxiety among individuals aged 15 and older affects approximately 14 million people, or 6% of Indonesia's population. The World Health Organization (WHO) also estimates that, in the Asia-Pacific region, more people die from suicide caused by depression than from tuberculosis. By 2020, depression is projected to rank second in terms of DALYs (Disability-Adjusted Life Years) across all age groups and genders. Depression is already the second leading cause of DALYs among individuals aged 15–44, regardless of gender. It can affect anyone, irrespective of gender, age, or background. Depression is highly prevalent, with an estimated 121 million people worldwide suffering from the disorder. It is readily diagnosable; structured psychotherapy combined with the administration of antidepressants or similar medications is 60–80% effective and can be delivered within primary medical care settings (Yusuf, 2021).

Furthermore, acne vulgaris can significantly impact self-esteem and self-image. The development of self-esteem and personal identity is crucial for young adults. Skin conditions that potentially lower self-confidence such as acne vulgaris can negatively affect psychosocial and sexual maturation. This lack of self-confidence may be linked to depression (Meliala & Lubis, 2020). Given the above, it is important to understand the factors linking acne vulgaris to depression in order to gain a more holistic understanding of the condition's impact on individuals. Such understanding can lead to more effective treatments, improved quality of life, and adequate psychological support for those suffering from acne vulgaris (Morshed et al., 2023; Sieradocha, 2024). By comprehending the psychological impact, we can develop better strategies to manage the condition comprehensively. The aim of this literature review is to examine the relationship between acne vulgaris and depression.

Method

Research Design

This study employed a literature review design to examine the relationship between acne vulgaris and depression. A literature review involves identifying, evaluating, analyzing, and synthesizing findings from previously published studies to develop a comprehensive understanding of a particular research topic. This approach was selected because it enables the integration of existing evidence concerning the psychological effects of acne vulgaris, particularly its association with depressive symptoms. The review focused on identifying patterns and consistencies across the available literature, examining factors that may contribute to the relationship between acne vulgaris and depression, and identifying areas requiring further investigation. The study used secondary data obtained from previously published research articles and other relevant scientific publications.

Literature Search Strategy

The literature search was conducted through electronic databases and online academic resources, including Google Scholar, PubMed, and ScienceDirect. Additional relevant publications were identified through other websites containing scientific and academic

literature. These sources were selected to obtain a range of publications addressing acne vulgaris, depression, and related psychological outcomes. The search focused on literature discussing the prevalence of acne vulgaris, the occurrence of depressive symptoms among individuals with acne, the relationship between acne severity and psychological well-being, and factors that may influence this association. Relevant publications were identified by examining their titles, abstracts, and available full texts to determine their suitability for the objectives of the review.

Eligibility Criteria

The selection of literature was guided by predetermined eligibility criteria to ensure its relevance to the research objectives. Publications were considered eligible if they addressed acne vulgaris, depression, or the psychological consequences of acne vulgaris and provided information relevant to understanding the relationship between these conditions. The review primarily considered literature published between 2019 and 2024, representing the six calendar years from 2019 through 2024. Eligible sources included original research articles, review articles, books, and relevant academic publications available through the selected databases and online resources. Publications were excluded if they did not address the research topic, did not provide relevant findings or information, or lacked sufficient accessible content for meaningful analysis. These criteria were intended to maintain the relevance of the selected literature while allowing the review to incorporate evidence from different research designs and settings.

Literature Selection Process

The literature selection process involved identifying potentially relevant publications through searches of the selected electronic databases and online academic resources. The identified publications were then assessed for relevance to the research objectives by examining their titles, abstracts, and, where available, full texts. Publications that addressed the relationship between acne vulgaris and depression or provided relevant information about associated psychological outcomes were considered for inclusion. The eligibility criteria were subsequently applied to determine which publications would contribute to the final review. Following the selection process, 23 research articles were reported as included in the literature review. These articles constituted the principal sources of evidence used to examine the relationship between acne vulgaris and depression. The number of records initially identified, duplicates removed, publications excluded, and full-text articles assessed was not documented in the available methodology.

Data Extraction

Data were extracted from the selected publications to facilitate a structured comparison of their findings. The information considered included the authors' names, year of publication, article title, study location, research design, principal findings, and conclusions. Attention was given to evidence concerning the occurrence of depression among individuals with acne vulgaris, the relationship between acne severity and depressive symptoms, and the potential influence of psychosocial factors, including self-esteem, body image, emotional distress, and quality of life. Information about relevant contributing factors and the implications of the findings for the psychological well-being of individuals with acne vulgaris was also considered. The extracted information was organized into a summary table to provide an overview of the included studies and facilitate comparison across publications.

Data Analysis and Synthesis

The collected information was analyzed using a descriptive and narrative synthesis approach. This approach involved reviewing the findings of the included publications, identifying recurring themes, and comparing similarities and differences in the reported results. The synthesis focused on several interconnected themes, including the association between acne vulgaris and depression, the psychological consequences of acne-related skin changes, the potential relationship between acne severity and depressive symptoms, and psychosocial factors that may influence mental well-being. Findings from different studies were interpreted in relation to the overall objective of the review, with consideration given to differences in study populations, research designs, and reported outcomes. Rather than combining numerical results statistically, the review synthesized the available evidence qualitatively to develop an integrated account of the relationship between acne vulgaris and depression. The resulting synthesis provided the basis for the discussion of the psychological burden of acne vulgaris and the importance of considering mental health alongside dermatological care.

Methodological Considerations

The findings of this literature review were interpreted considering the characteristics and limitations of the available publications. Because the review relied on secondary data, the analysis was dependent on the quality, scope, and methodological rigor of the included studies. Differences in study populations, assessment instruments, research settings, and study designs may have contributed to variations in the reported associations between acne vulgaris and depression. Furthermore, the review was limited to publications identified through the selected databases and online resources and to the stated publication period. The absence of a documented comprehensive search strategy, duplicate-removal procedure, formal risk-of-bias assessment, and detailed screening records limits the reproducibility of the review. Accordingly, the findings should be interpreted as a narrative synthesis of the available literature rather than as a definitive estimate of the causal relationship between acne vulgaris and depression.

Results and Discussion

Following a search for scientific articles via Google Scholar, PubMed, ScienceDirect, and web pages, 23 articles meeting the inclusion criteria were identified from the review of articles published between 2019 and 2024, as follows:

Table 1. Results of Article Review

Author	Year	Article Title	Location	Research Design	Results	Conclusion
Roro Ayu Sekar Tyasari, Siti Maisyaroh Bakti Pertiwi, and Dhega Anindhita Wibowo	2022	Age Characteristics and Their Impact on the Quality of Life of Students with Acne Vulgaris	State Senior High School 1 Klego, Boyolali, Central Java	Observational analytical study with a cross-sectional design	The study found a significant relationship between acne vulgaris and the quality of life of female students at SMA Negeri 1 Klego, Boyolali, Central Java.	Acne vulgaris can have a substantial emotional impact, including embarrassment and low self-esteem associated with skin appearance and acne scarring. These effects may influence

						students' academic performance and social interactions, emphasizing the importance of appropriate acne management to improve quality of life.
Ramadhina Tria Sesanti and Ratih Pramuningtyas	2021	The Relationship Between Stress Levels, BB Cream Use, and the Incidence of Acne Vulgaris Among Female Students at the Faculty of Medicine, Universitas Muhammadiyah Surakarta, in 2021	Faculty of Medicine, Universitas Muhammadiyah Surakarta; data collected online using Google Forms	Observational analytical study with a cross-sectional design	The study identified a significant relationship between stress levels, BB cream use, and the incidence of acne vulgaris among female medical students.	Acne vulgaris among young adults may be associated with several factors, including hormonal influences, cosmetic use, hygiene practices, sleep patterns, and stress. Further research is needed to clarify the relationships between stress, cosmetic use, and acne vulgaris.
Arisa Atika Meliala and Riri Arisanty Safirin Lubis	2020	Relationship Between Acne Vulgaris and Anxiety Symptoms in Students at the Faculty of Medicine, Muhammadiyah University, North Sumatra	Faculty of Medicine, Universitas Muhammadiyah Sumatera Utara	Observational analytical study with a cross-sectional design	Among 65 participating students, 56.9% had Grade 1 acne vulgaris, while mild anxiety was the most common anxiety symptom, affecting 29.2% of participants. The study reported a significant association between acne vulgaris and anxiety symptoms.	Acne vulgaris is associated with anxiety symptoms among medical students. The findings highlight the importance of considering psychological well-being when managing dermatological conditions.
Nur Sifatullah and Zulkarnain	2021	Acne (Acne Vulgaris): A Review of	Not specified	The article describes several approaches, including	Acne treatment involves correcting follicular abnormalities,	Acne vulgaris is a multifactorial skin condition influenced by excessive

		Infectious Skin Diseases		meta-analysis, systematic review, antibacterial activity testing, and hospital-based studies; the specific design of the reviewed article requires verification.	reducing sebum production, decreasing Propionibacterium acnes colonization, and alleviating inflammation. The article also discusses factors that may exacerbate acne in adults.	sebum production, follicular changes, and bacterial involvement. Hormones, stress, age, diet, and environmental factors may also contribute to its development.
Suri Afnanita, Surya Nola, and Eva Mardalena	2023	Factors Influencing the Development of Acne Vulgaris Among Adolescent Students at Babun Najah Islamic Boarding School	Babun Najah Modern Islamic Boarding School	Case study, as reported in the source	Among 123 students, 67 male students were reported to have acne vulgaris, and mild acne was the most common severity level, affecting 69 respondents (56.1%). Additionally, 66.7% did not use cosmetics, 16.3% had a reported genetic predisposition, and 37.4% did not maintain facial hygiene after activities.	Acne vulgaris is common among adolescents at Islamic boarding schools and occurs with varying degrees of severity. The study discusses potential contributing factors, including dietary habits, facial hygiene, and stress, highlighting the importance of understanding acne risk factors for prevention and management.
Inder P. Singh and Abhishek Masih	2023	Depression Among Adolescent s with Acne Vulgaris: A Cross-Sectional Assessment	Outpatient service; specific institution not stated in the supplied information	Cross-sectional study	The prevalence of depression was higher among adolescents with acne vulgaris than among healthy peers. No association was found between depression scores and acne severity, duration, treatment type, or post-acne scarring.	Adolescents with acne vulgaris may experience an increased burden of depressive symptoms, particularly those aged 16–19 years. The study emphasizes the importance of assessing psychological well-being in adolescents

					Adolescents aged 16–19 years showed a higher prevalence of depression, assessed using the Patient Health Questionnaire-9 (PHQ-9).	receiving acne treatment.
Nora N. Hussien and Afaf M. Eladl	2021	Anxiety and Depression in Egyptian Patients with Acne Vulgaris	Zagazig University Hospital, Egypt	Cross-sectional study	Patients with acne vulgaris exhibited higher levels of anxiety (23.9%) and depression (13.1%) than the control group. Severe acne was associated with anxiety in 66.7% and depression in 44.4% of patients.	The study reported a significant association between acne severity and anxiety and depression. Patients with more severe acne tended to exhibit higher levels of psychological distress, supporting the importance of mental health assessment in dermatological practice.
Coşkun Öztekin and Aynure Öztekin	2020	The Association of Depression, Loneliness, and Internet Addiction Levels in Patients with Acne Vulgaris	Dermatology clinic at a university hospital	Statistical analysis using ANCOVA and non-parametric methods, as reported in the source	Patients with acne vulgaris experienced psychosocial difficulties, including depression and loneliness, and showed associations involving internet addiction. Loneliness and internet addiction were correlated among young adult patients with acne.	Acne vulgaris may be accompanied by psychosocial difficulties, loneliness, depressive symptoms, and internet addiction. The authors emphasized the importance of multidisciplinary care and longitudinal research to clarify potential causal relationships.
Amr Molla, Hassan Alrizqi, Emtinan Alharbi, Arwa Alsubhi,	2021	Assessment of Anxiety and Depression in Patients with Acne	Dermatology department of Ohud Hospital and two private clinics in the Medina	Case-control study	The study included 592 participants: 296 with acne vulgaris and 296 without acne. Most	The study compared anxiety and depression in participants with and without acne

Saad Alrizqi, and Omar Shahada		Vulgaris in Medina: A Case-Control Study	region of Saudi Arabia		participants were female (67.6%), aged 23–33 years (42.7%), and Saudi nationals (95.3%). Acne prevalence was significantly higher among unmarried participants ($p < 0.001$). The reported results also indicated higher depression levels among participants with a bachelor's degree in the control group.	vulgaris. The reported findings indicate that sociodemographic characteristics and educational background may be relevant to interpreting psychological outcomes, although the specific relationship between acne and depression requires careful interpretation of the full study results.
Behnaz Hamedani	2020	Frequency of Depression in Patients with Acne Vulgaris Treated with Short-Course Low-Dose Oral Isotretinoin	Dermatology Department, Rasul Akram Hospital, Tehran, Iran	Case-control study, as reported in the source	Depression levels were reported to increase during isotretinoin treatment; however, the study also reported no statistically significant difference in depression scores between the isotretinoin and control groups.	The relationship between low-dose isotretinoin treatment and depression remains uncertain based on the reported findings. The inconsistent statements regarding statistical significance should be checked against the original article before drawing conclusions about the association between isotretinoin and depression.

Source note: The table reorganizes the information you provided without independently verifying the original studies. Where the supplied information was incomplete or internally inconsistent, this is indicated rather than replaced with unsupported details.

Depression and Acne Vulgaris: Psychological Impact and Pathophysiological Mechanisms

Depression is a common mental health disorder and a major contributor to the global burden of disease. It can give rise to various psychological and physiological problems that impair an individual's ability to function at work and at home. Furthermore, depression frequently affects

adolescents and young adults, increasing the risk of suicide, poor health, unhealthy personal behaviors, impaired social well-being, and low educational attainment. A wide range of factors can cause depression, spanning socioeconomic, environmental, and cultural influences to psychological stressors such as relationship issues, family and peer pressure, sleep deprivation, anxiety about the future, loneliness, and heavy workloads.

Separately, acne vulgaris is a chronic inflammatory skin disorder. Its pathophysiology is characterized by excessive sebum production, abnormal keratinization within hair follicles, and the proliferation of *Propionibacterium acnes* within the pilosebaceous unit. Elevated androgen levels at the onset of puberty can stimulate high sebum production, alter skin cell activity, and trigger inflammation and colonization of hair follicles by *Propionibacterium acnes* bacteria, all of which can lead to acne. Acne vulgaris can significantly impact psychological functioning, often causing anger, anxiety, and depression among adolescents and young adults. The condition typically manifests on the face, chest, shoulders, and back. Acne usually begins during adolescence and can persist into adulthood.

Global Statistics

Acne is one of the most common skin diseases, affecting more than 80 percent of adolescents and young adults worldwide. ⁷ Acne vulgaris consistently ranks among the top three most common skin conditions across all populations, as evidenced by large-scale studies in the UK, France, and the United States. ⁸ In China, the prevalence reaches 51.30%. ⁹ In Hong Kong, the reported prevalence of acne vulgaris is 91.3%, with 52.2% of individuals suffering from active acne vulgaris at the time of observation. The prevalence is higher among those aged 15–20 compared to those aged 21–25.

Studies in Southeast Asia indicate an acne vulgaris prevalence of 40–80%. ⁸ Among Southeast Asians living in the United States, 49% of those seeking care for skin conditions were diagnosed with acne vulgaris, making it the leading diagnosis at 37%. Asian patients exhibit different characteristics compared to Caucasian patients, showing a lower incidence of nodulocystic acne. Nodulocystic acne vulgaris is reported to occur more frequently in white men than in black men. Meanwhile, in Indonesia, records from the Indonesian Aesthetic Dermatology Research indicate that acne vulgaris cases accounted for 60% of skin condition cases in 2006, 80% in 2007, and 90% in 2009. The incidence of acne among adolescents ranges from 30% to 60%, with the highest incidence occurring between the ages of 14 and 17 for females and 16 and 19 for males (Sifatullah et al., 2021; Putri et al., 2024).

Acne Vulgaris

Physical appearance is often a primary focus of attention, and acne is one issue closely related to it. Acne is a chronic inflammatory skin disease. It is defined as a non-contagious skin condition caused by the clogging of hair follicles with oil and dead skin cells. Medically, it is known as Acne vulgaris. Acne vulgaris is a long-term dermatological condition characterized by the formation of comedones, red papules, and cysts with or without scarring resulting from inflammation of the pilosebaceous unit. It is an obstructive and inflammatory disease caused by excessive secretion, leading to sebaceous issues on the skin that have the potential to cause scarring. Acne vulgaris typically emerges during puberty but can also appear in children and persist into adulthood. Like many common skin disorders, it can resolve on its own; however, it usually begins during adolescence (affecting 85%–90% of teenagers) and can last for more than 10 years. Estimated prevalence rates vary depending on the approach used. From an epidemiological perspective, Acne vulgaris is one of the most common skin conditions, affecting over 645 million people worldwide (9.4%).

Acne vulgaris can impact a person's quality of life, either positively or negatively. A study by Dicky, Hendri, and Cicilia (2016) involving 102 samples yielded a result of 0.422 ($p > 0.05$), indicating that individuals with Acne vulgaris possessed high self-confidence. Conversely, the condition can also lead to a decline in quality of life. Gawkrödger (2009) noted that Acne vulgaris has not only negative physical effects on the skin but also psychological impacts on the sufferer; it can cause depression thereby directly reducing quality of life as well as feelings of shame and diminished self-confidence.

The psychological and emotional burdens reported by acne patients are comparable to those experienced by patients with other chronic conditions such as asthma, epilepsy, diabetes, back pain, and arthritis (Christensen & Jafferany, 2023; Lakum, 2024; Baskara net al., 2025). This is because acne impacts the daily lives of adolescents who are undergoing significant physical, intellectual, and emotional changes. Patients reporting high levels of emotional distress require prompt treatment specifically psychotherapy and psychopharmacology alongside systemic and topical acne therapies. Numerous studies indicate that school-related difficulties and a lack of romantic relationships or friendships contribute to the suffering of patients with acne vulgaris. Other research links acne vulgaris to various conditions, such as insomnia and attention deficit hyperactivity disorder (ADHD). Acne patients also tend to exhibit higher levels of depression, particularly among females, although males can also be significantly affected; Lello et al. reported that males experience much higher rates of moderate-to-severe acne compared to females (Szepietowska, et al., 2023; Hammill & Vaillancourt, 2023).

Depression

According to the World Health Organization (WHO) in 2012, depression is a common mental disorder characterized by feelings of sadness, loss of interest, lack of energy, and feelings of guilt. WHO data from 2016 indicates that approximately 35 million people suffered from depression. Furthermore, data from the 2013 Basic Health Research (Riskesdas) showed that the prevalence of mental-emotional disorders manifested by symptoms of depression and anxiety among individuals aged 15 and older reached approximately 14 million people, or 6% of the Indonesian population.

In 2017, the frequency of depression among dermatology patients was found to range from 25% to 40%, compared to a prevalence of 6–8% in the general population. Acne scarring is a highly distressing complication associated with acne; it is reported to occur in up to 95% of patients, sometimes persisting even despite prompt and appropriate treatment. However, the actual incidence of residual scarring remains unknown. Visible depressed scars are known to negatively impact patients' psychological well-being and quality of life. Post-acne scarring can be a risk factor for depression, anxiety, and even suicide (Sood et al., 2020).

Generally, the more severe the acne, the greater its impact on the patient's quality of life, self-esteem, and body image, and the higher the risk of depression (Rafiq & Mehdi, 2020). According to the American Psychological Association, symptoms of psychopathology typically include depression, stress, anxiety, hallucinations, bipolar disorder, and psychosis. Depression can be defined as a state of low mood or a lack of interest in activities. It may last for only a day or two, or it can persist over a long period (Saba et al., 2022).

Several factors contributing to depression have been identified, including genetic, biochemical, environmental, and psychological factors. In some cases, depression stems purely from genetic factors; a family history of bipolar disorder, alcohol abuse, schizophrenia, or other mental disorders also increases the risk of developing depression. Trauma, the death of a loved one, difficult circumstances, or stressful conditions can trigger depressive episodes, though

depression can also be precipitated by less clearly defined factors. Depression is categorized into varying levels of severity: mild, moderate, and severe. In clinical practice, the severity of depression is typically assessed using tools such as the Hamilton Rating Scale for Depression (HRSD) or the Beck Depression Inventory (BDI). Severe depression is characterized by the "Depressive Triad": hypoactivity, a sad (dysphoric) affect, and speech ranging from retardation ("remming") to complete blocking. Severe depression may also be accompanied by psychotic symptoms such as delusions and auditory hallucinations centered on themes of guilt, sinfulness, low self-worth, nihilism, or perceived threats (Bayliss, 2025; Rozaini, 2025; Abdulrazak, 2026)

The Beck Depression Inventory (BDI) is one of the most popular measurement scales; it is widely used not only as a self-report instrument to evaluate depression severity but also for screening purposes in clinical practice and among general populations of both adolescents and adults. Since its initial development in English in 1961, the BDI has been translated into numerous languages and has demonstrated high reliability and validity across cultures. The BDI evaluates 21 symptoms of depression: 15 relate to emotions and attitudinal changes, while 6 are somatic symptoms. Each symptom is rated on a 4-point intensity scale, and the scores are summed to yield a total score ranging from 0 to 63. Higher scores indicate greater severity of depression; scores of 0–16 indicate the absence of depression, while scores of 17–63 indicate the presence of depression.

Genetics

Genetics plays a significant role in the development of acne vulgaris. Previous research indicates that individuals with siblings affected by acne vulgaris are at higher risk of developing the condition themselves, particularly when sharing the same environment. Regarding genetic components, the number of sebaceous glands is an inherited trait; consequently, twins often experience acne of similar severity. A bacterium known as *Propionibacterium acnes* typically resides within the hair follicles. While not necessarily a pathogen, it contributes to acne progression by exacerbating the severity of the disease. Specific genetic variations such as those encoding androgen-regulating proteins like androgen receptors can also influence acne severity, as androgens increase sebum production and worsen the condition. Furthermore, genetic variations in genes involved in immune and inflammatory responses contribute to a predisposition for acne Zhang & Zhang (2023).

Hormones

Acne vulgaris is linked to hormonal factors. Progesterone plays a role in the onset of acne vulgaris in women particularly during the week preceding menstruation leading to premenstrual acne. Androgens also play a crucial role in the development of acne vulgaris, although they do not necessarily dictate the severity of the condition. Androgens influence the enlargement of sebaceous glands and sebum production, as well as keratinocyte proliferation within the sebaceous duct and acroinfundibulum. Hormonal imbalances resulting from medical conditions, such as polycystic ovary syndrome (PCOS), can also trigger acne. PCOS is frequently associated with elevated androgen levels, which can aggravate skin conditions. Additionally, the use of anabolic steroids whether for medical or non-medical purposes can raise androgen levels and lead to severe acne. Consequently, developing more effective treatment approaches such as hormone therapy or lifestyle modifications is essential for managing and reducing acne severity (Ilham, 2024).

Environment and Occupation

Acne is frequently observed among individuals working in industrial and manufacturing settings a condition known as "occupational acne" due to the heightened risk of exposure to

substances such as oils and metal dust. Chloracne is a specific type of acne caused by exposure to halogenated aromatic hydrocarbons known as "chloracnegens."

Conclusion

Findings from the ten journals indicate an association between acne vulgaris and depression. Acne vulgaris can affect individuals of all ages and has been shown to have a significant emotional impact manifesting as feelings of shame and low self-esteem linked to skin appearance and acne scarring which can contribute to depression. Furthermore, severe or persistent acne is often accompanied by profound frustration and a sense of hopelessness, as treatment efforts do not always yield satisfactory results. Therefore, acne is not merely a dermatological issue but also a serious psychological one, necessitating a comprehensive treatment approach that incorporates emotional and psychological support alongside appropriate dermatological care.

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